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## **EUROPEAN PATENT APPLICATION**

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**(54) Express-coffee machine loadable with wafers**

(57) Express-coffee-machine loadable with wafers for family or professional use including a casing (2), a unit (4) for pressing the wafer (36), into which the water is led through a boiler (16) which is arranged below said unit (4), permitting an opening from the above of said unit (4).

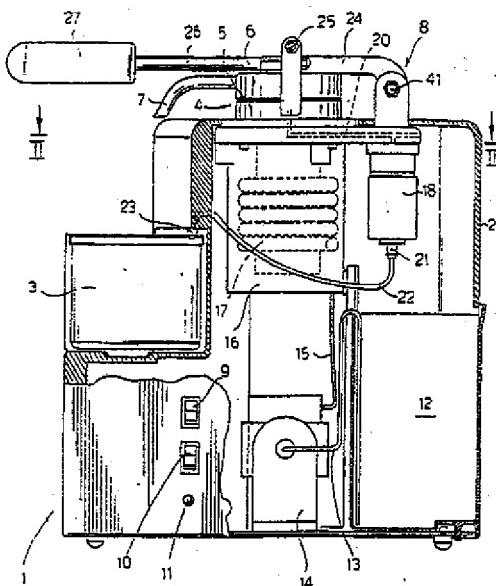


FIG. 1

## Description

The present invention relates to an express-coffee-machine to be loaded with wafers for domestic use, for offices and the like. There are known machines for preparing coffee loaded with preassembled wafers.

These machines are provided with a boiler situated above with two heads between which the wafer containing the ground coffee blend is arranged.

After having approached both heads to each other by operating crank mechanisms, the water, which is heated and submitted under pressure by means of an electric pump is filtered through the wafer thereby producing the desired beverage.

A drawback of these machines is due to the structural complications related to the system of approaching both heads which in the manual solution must be operated by means of a lever situated in front of or laterally to the machine.

Another drawback of these machines relates to the impossibility of obtaining an upper opening because of the presence of the boiler which makes less practical the loading of the machine and much difficult the cleaning of the same in the zone of the infusion unit.

The purpose of the present invention consists in eliminating said drawbacks by offering an express-coffee-machine with wafers which is structurally simple and can be easily operated when opening and closing it and easily to be cleaned.

This and other purposes are achieved with the coffee-machine with wafers according to the invention, offering the characteristics of claim 1.

The preferred embodiments of the invention result from the dependent claims.

Further characteristics of the invention will appear clearer thanks to the detailed description which follows, relating to a simple embodiment thereof and therefore not-limiting embodiment thereof, illustrated in the attached drawings, whereby:

- Fig. 1 is a schematic middle cutaway view with some parts of the coffee-machine according to the invention shown;
- Fig. 2 is a cutaway view according to the line II - II of Fig. 1;
- Fig. 3 is a plan view from above of the sole wafer pressing unit of the coffee machine according to the invention;
- Fig. 4 is a cutaway view according to the line IV - IV of Fig. 3;
- Fig. 5 shows a side view of a first disengaged position of the wafer pressing unit of the coffee machine according to the invention;
- Fig. 6 is a view similar to Fig. 5 showing an opening position of the wafer pressing unit of the coffee machine according to the invention.

In Fig. 1 it is shown a coffee machine 1 with wafers

according to the invention, including a casing 2, an extractable vessel 3, a unit 4 for pressing the wafer 36 (Fig. 6) comprising one first fixed lower head 5 which can engage a second movable upper head 6 by means of lever closing means 8. This second head 6 is also provided with a spout 7 for distributing the beverage.

On the casing 2 there are provided one first main switch 9 for supplying a resistance 17, a second switch 10 to actuate the distribution of the beverage and a warning light 11 for controlling the temperature of the water to be infused on the wafer 36 containing the ground coffee blend.

By operating the first switch 9, the resistance 17 of a boiler 16 is supplied and the water contained therein is heated and when it reaches the desired temperature (for example 98°C), one thermostat, not shown in the figure, switches off the warning light 11, which was switched on when the device 1 was operated, showing that the water has reached a pre-established temperature level.

When the second switch 10 is changed over, an electric pump 14 sucking the water loaded into one vessel 12 by means of a first tube 13 is actuated and leads it through a second tube 15 into the boiler 16.

The changed over condition of the second switch 10 contemporaneously actuates a solenoid valve 18 which, as the cutaway view of Fig. 2 shows more in detail, is communicating with the boiler 16 by means of a first conduit 19 and with the head 5 by means of a second conduit 20.

The solenoid valve 18 puts into communication the conduits 19, 20 by supplying with heated water under pressure the head 5 provided with a filter 33 and supporting a gasket 32, which, as shown in Fig. 6, is foreseen for sealing the upper head 6. This water, pushed through the wafer 36 containing the coffee blend arranged between the first and the second head 6, provided with a filter 40 too, lets the beverage flow through the spout 7.

In order to guarantee the safety of the boiler 16, the solenoid valve 18 is provided with a drain valve 21 connected by means of a third tube 22 with an opening 23 so as to permit the condensate water to be drained into the removable vessel 3.

With particular reference to the Fig. 3 and 6 it is shown the lever closing device 8 including an arm 24 which is hinged at its first end portion on the position 41 with the pressing unit 4, in particular with the structure carrying the fixed lower head 5. The head 6 is secured to this arm 24 by means of fixing elements 29, particularly studs, as shown in the Figures. The other end of the arm 24 is connected by means of a joint 25 with a control lever 26 including a handle 27.

A fork 28 is connected integral with and perpendicular to said lever 26, at the end portions of which, as Fig. 4 shows in detail, there are foreseen some cavities 30 engaging the projections 31 provided on the head 5.

In order to close the unit 4 starting from the position

illustrated in Fig. 6, the head 6 is initially lowered onto the head 5 by making a first rotation of the arm 24 hinged with the unit 4, until the head 6 engages the head 5 as Fig. 5 shows.

In order that the fork 28 is in a proper engagement position with respect to the projection 31, when the two heads 5 and 6 are into contact, the lever 26 contains a resilient element 34 (Fig. 6) in particular a spring, so that when the closing device 8 is not operating, the lever 26 is moved away of an opening angle with respect to the arm 24 and thereby permitting the fork 28, which in turn is integral with the arm 24, to attain the proper engagement position.

The opening angle of the lever 26 with respect to the arm 24 is regulated by means of blocks 35. Thereafter, a further pressure on the lever 26 causes a rotation of the lever 26 with respect to the joint 25, by engaging the cavities 30 of the lever 26 with the projections 31 of the fixed head 5.

Said cavities 30 have flared edges in order to facilitate the insertion into said projections 31. According to what explained, there are clear the advantages of the coffee machine according to the invention, which is provided with a simplified closing unit, which makes the operations of loading and cleaning thereof easier.

5. Coffee machine according to claim 3, characterized in that said control lever (26) co-operates with blocks (35) for regulating the opening angle of the same lever with respect to said arm (24).

### Claims

1. Express coffee machine loadable with wafers including a casing (2), a unit (4) for the pressing of the wafer (36) in which the water is led through a boiler (16), characterized in that said unit (4) includes a fixed lower head (5) and a movable upper head (6) which can be engaged and disengaged to each other by means of lever closing means (8), and that said boiler (16) is arranged below said unit (4). 30
2. Coffee machine according to claim 1, characterized in that said lever closing means (8) includes an arm (24) carrying said movable upper head (6), hinged at its first end portion with the structure carrying said fixed lower head (5) and connected at the other end portion by means of a joint (25) with a control lever (26). 40
3. Coffee machine according to claim 2, characterized in that said control lever (26) is fixed integrally with a fork (28), at the ends of which some cavities (30) engaging projections (31) provided on the fixed head (5) are provided, said cavities (30) being provided with flared edges in order to facilitate the introduction of said projections (31) therein. 50
4. Coffee machine according to claim 3, characterized in that said control lever (26) contains a resilient element (34), in particular a spring. 55

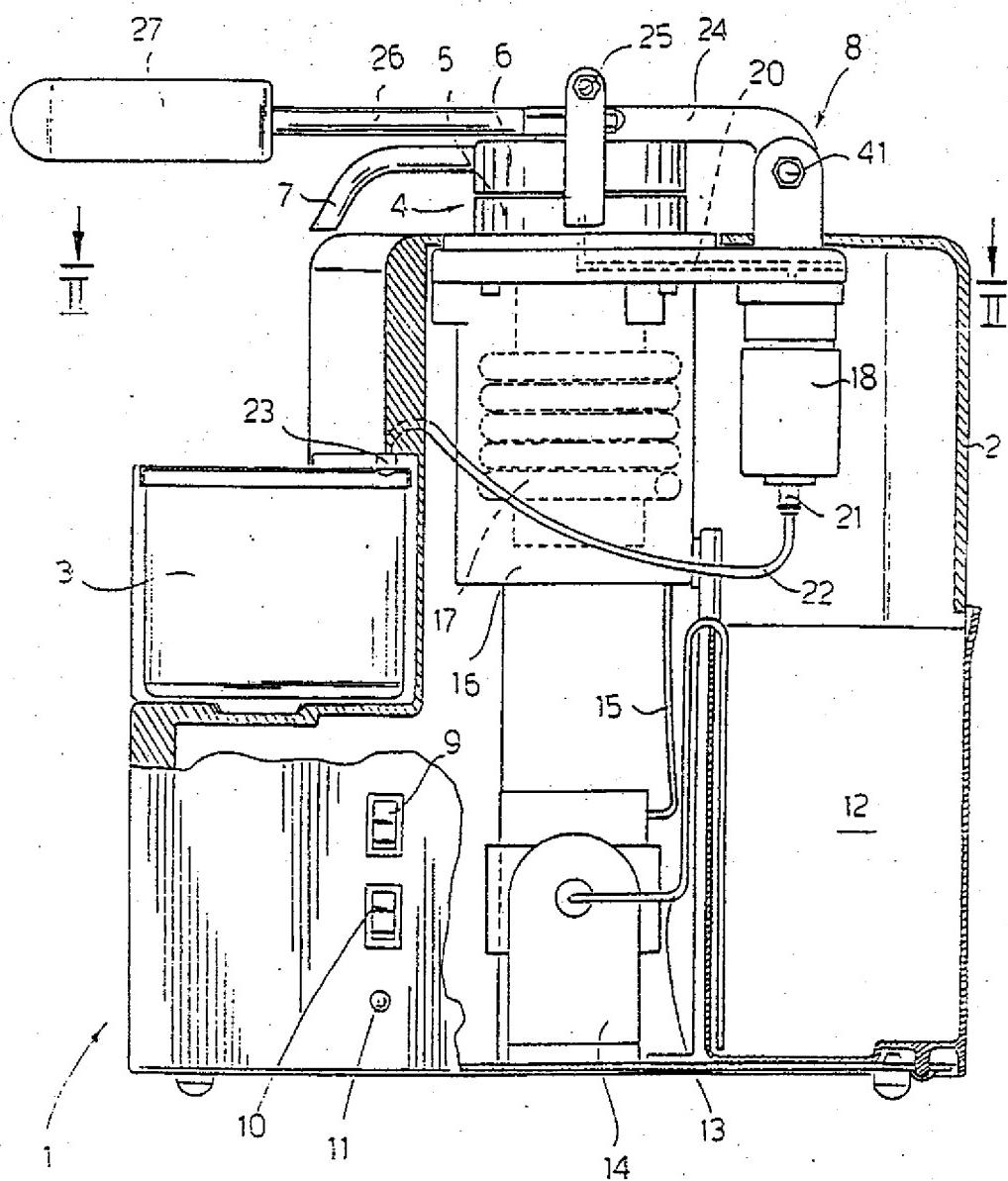


FIG. 1

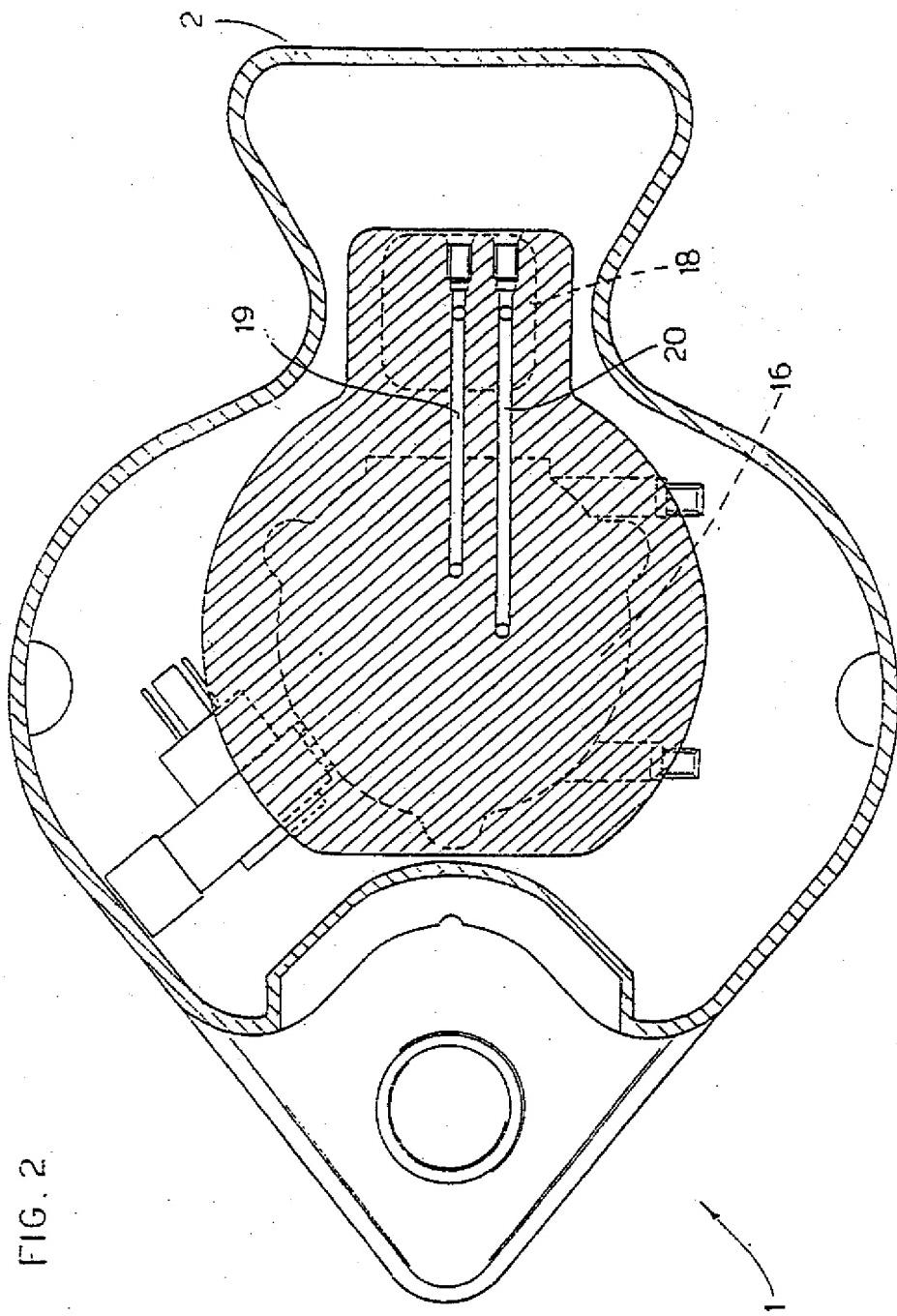


FIG. 2

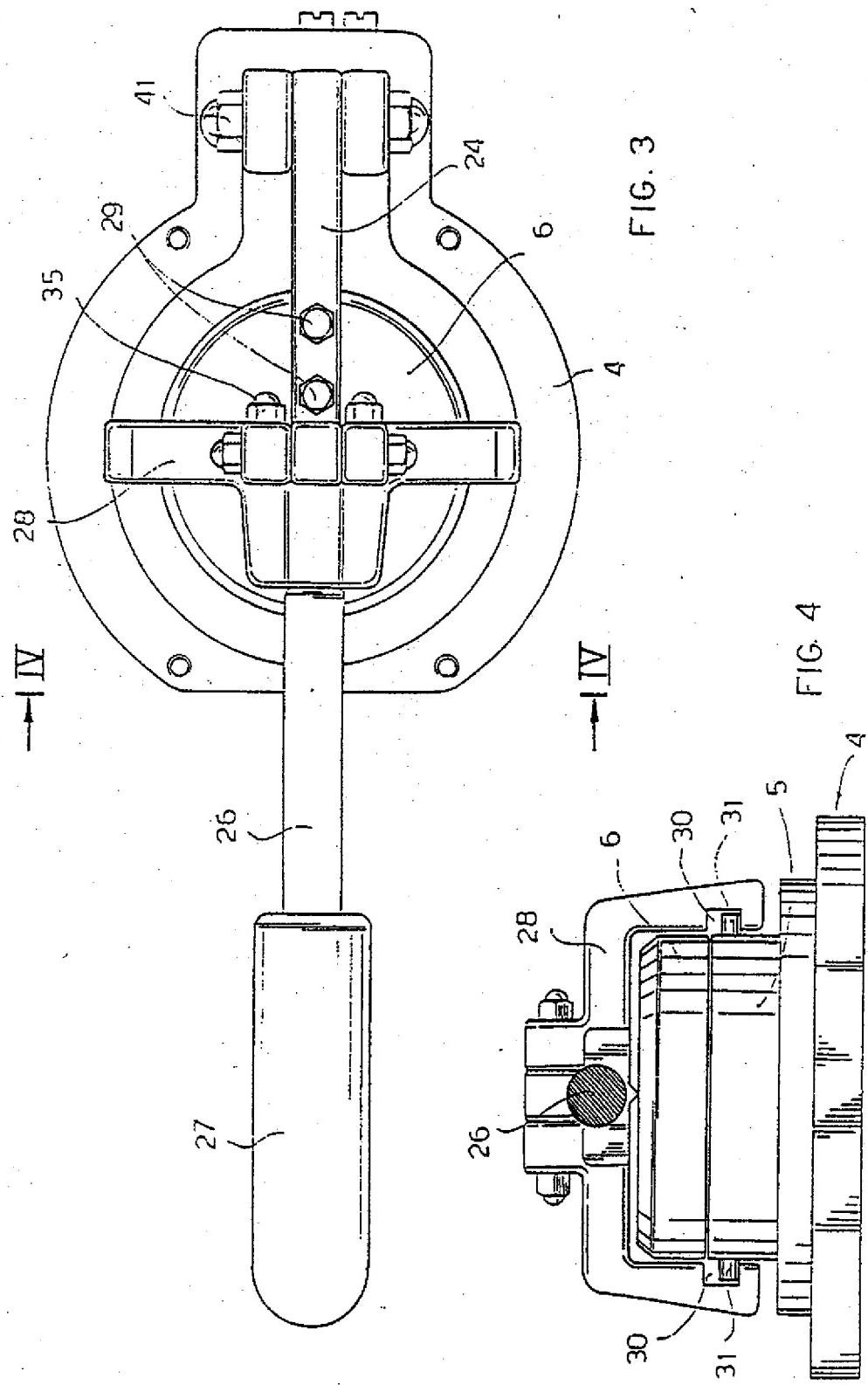


FIG. 5

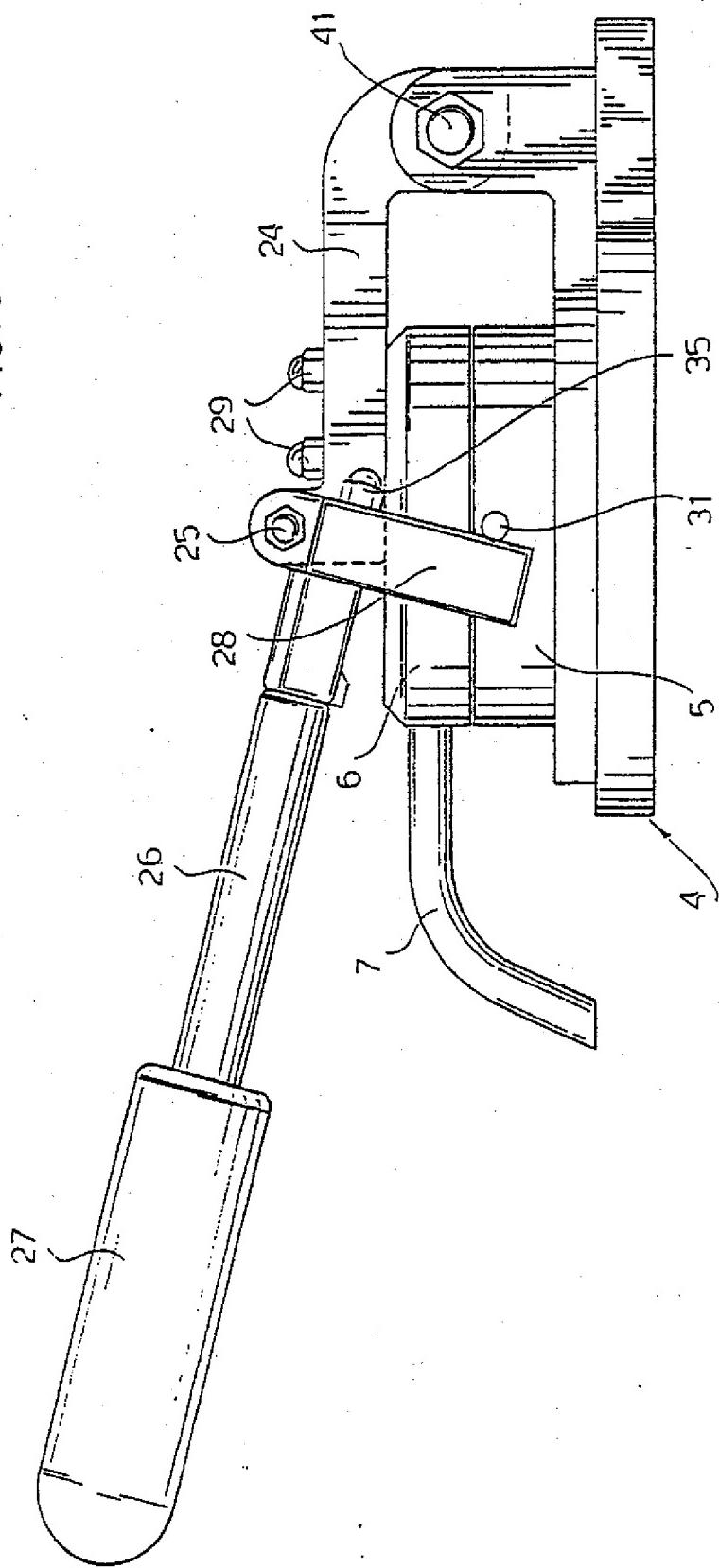
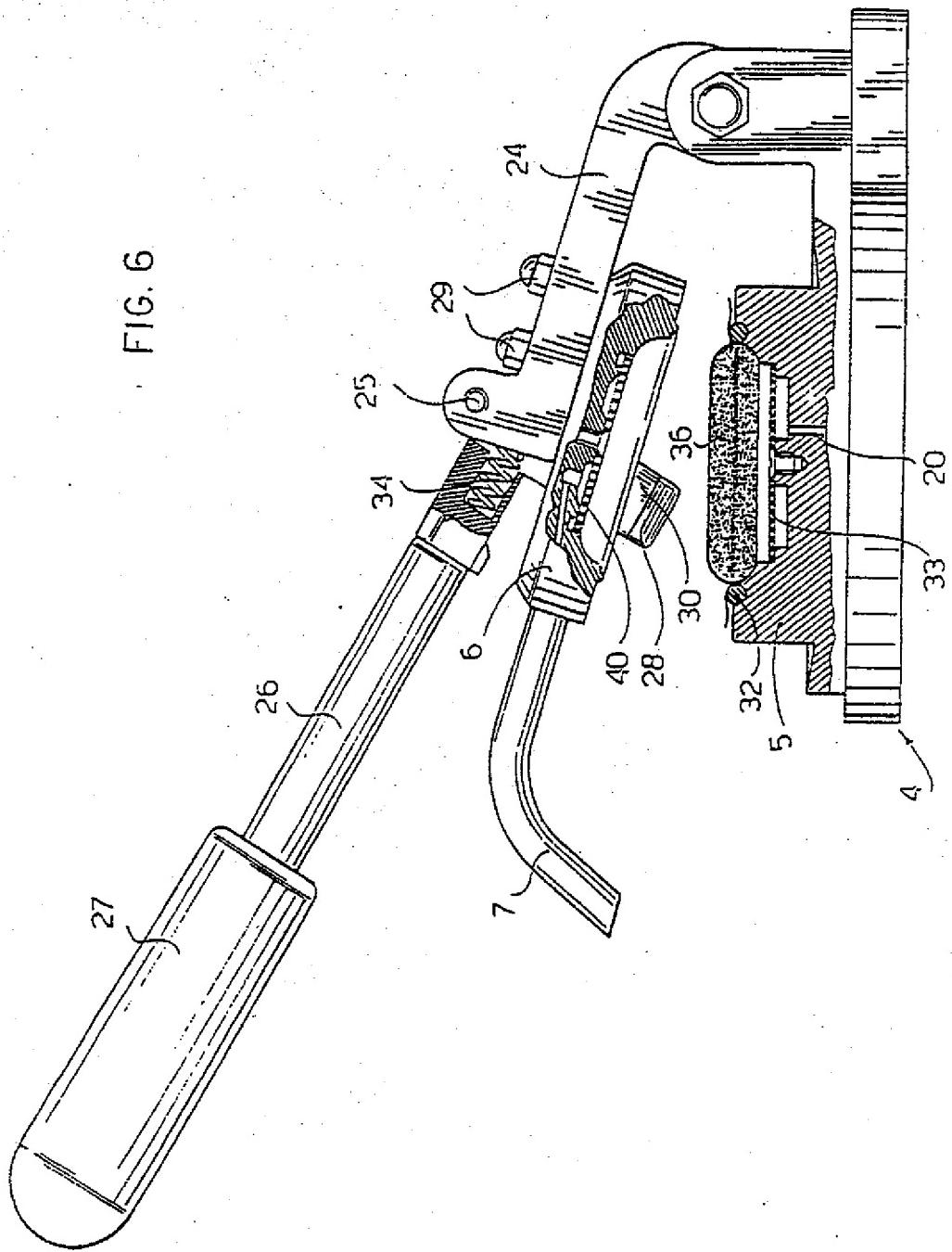


FIG. 6





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## EUROPEAN SEARCH REPORT

Application Number  
EP 98 10 1852

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	US 2 451 195 A (BROWN) 12 October 1948 * column 4, line 18 - column 8, line 19; figures 1-10 *	1-5	A47J31/40
A	US 3 007 392 A (PECORARO ET AL) 7 November 1961 * column 1, line 41 - column 4, line 48; figures 1-3 *	1-3	
A	US 5 531 152 A (GARDOSI GIANCARLO) 2 July 1996 * column 5, line 58 - column 6, line 33; figures 4,5 *	1	
A	US 3 403 617 A (LAMPE WILLY G) 1 October 1968 * column 2, line 9 - column 4, line 72; figures 1,2 *	1	
A	DE 296 01 233 U (J J DARBOVEN GMBH & CO) 13 June 1996		TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	EP 0 615 713 A (EUROMATIK SRL) 21 September 1994		A47J
<p>The present search report has been drawn up for all claims</p>			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	7 May 1998	Bodart, P	
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
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